

USSN: 10/747,873
Group Art Unit: 2876
Docket No. 161-P-071BUS01

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph [0040] with the following amended paragraph:

[0040] The embodiment of the invention shown in Figure 4 provides for the presence of shutter 8 and for the light sources 9 to be divided into two groups. With reference to said embodiment, each light source 9a and 9b is fed according to an illumination cycle 20, which comprises an illumination ~~step~~cycle-portion 21 and a non-illumination ~~step~~cycle-portion 22 following one another over time; the action of shutter 8 makes the conversion on sensor 5 occur according to a conversion cycle 23 (or scanning period), comprising a non-acquisition step 24 and an acquisition step 25 (or exposure time) following one another over time.

Please replace paragraph [0042] with the following amended paragraph:

[0042] The amount of unused light emitted by sources 9a₁, 9b₁ of the first group can be adjusted both by adjusting the time difference between the two illumination cycles 20₁ and 20₂, and adjusting the ~~period~~duration of the non-acquisition step 24, as well as adjusting the ~~period~~duration of the illumination ~~step~~cycle-portion 21.

Please replace paragraph [0043] with the following amended paragraph:

[0043] A particular and interesting case is that shown in Figure 5, wherein the illumination ~~step~~cycle-portion 21 is equal to the non-illumination ~~step~~cycle-portion 22, and the two cycles 20₁ and 20₂ are in phase opposition. The phase opposition provides for a single group of light sources always on, thereby reducing the peak current absorbed by the illuminating system 3. Figure 6 shows for this case the effect of the variation of the ~~period~~duration of the acquisition step 25 (or exposure time) on the signal produced by sensor 5; the four curves show how such ~~period~~duration can be advantageously adjusted to reduce, cancel or even reverse the effects of the illumination and transmission unevenness.

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Please replace paragraph [0044] with the following amended paragraph:

[0044] The embodiment of the invention shown in Figure 7 provides for the presence of shutter 8 and for the light sources 9 to be divided into three groups. With reference to such embodiment, each light source 9c is fed according to an illumination cycle 30, which comprises an illumination ~~stepcycle-portion~~ 31 and a non-illumination ~~stepcycle-portion~~ 32 following one another over time; the action of shutter 8 makes the conversion on sensor 5 occur according to a conversion cycle 33, comprising a non-acquisition step 34 and an acquisition step 35 following one another over time.

Please replace paragraph [0046] with the following amended paragraph:

[0046] As in the case of Figure 4, also in this case the amount of unused light emitted by the sources 9c₁ of the first group and 9c₂ of the second group can be adjusted both by adjusting the time difference between the illumination cycles 30₁, 30₂ and 30₃ and adjusting the ~~periodduration~~ of the non-acquisition step 34, as well as adjusting the ~~periodduration~~ of the illumination ~~stepcycle-portion~~ 31.

Please replace paragraph [0047] with the following amended paragraph:

[0047] The embodiment of the invention shown in Figure 8 provides for no shutter and for the light sources 9 to be divided into two groups. With reference to such embodiment, each light source 9a and 9b is fed according to an illumination cycle 40, which comprises an illumination ~~stepcycle-portion~~ 41 and a non-illumination ~~stepcycle-portion~~ 42 following one another over time; without shutter, potential acquisition (or scanning) steps follow one another on sensor 5, which are alternately rejected and used, so as to have a conversion cycle 43, which comprises a non-acquisition step 44 and an acquisition step 45, having the same ~~periodduration~~, that follow one another over time.

Please replace paragraph [0050] with the following amended paragraph:

[0050] The embodiment of the invention shown in Figure 9 provides for no shutter and for the light sources 9 to be divided into two groups. With reference to such embodiment, each light source 9a and 9b is fed according to an illumination cycle 50, which comprises an illumination ~~stepcycle-portion~~ 51 and a non-illumination ~~stepcycle-~~

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portion 52 following one another over time. The illumination cycles 50 differ in the two groups of sources 9a and 9b and in particular, the periodduration of the illumination stepcycle-portion 51₂ for sources 9a₂ and 9b₂ (cycle 50₂) is longer than that 51₁ for sources 9a₁, 9b₁ (cycle 50₁). Conversion cycles 53 follow one another on sensor 5 with a period corresponding to that of the illumination cycles 50; the conversion cycles 53 only comprise an acquisition step 55 and no non-acquisition step. The effect of this solution is that the quantity of light emitted by the sources of the second group 9a₂ and 9b₂ (given by the integral of the respective waveform represented) is greater than that emitted by the first group, therefore compensating both the illumination unevenness and the transmission unevenness.

Please replace paragraph [0053] with the following amended paragraph:

[0053] However, it is also possible to differentiate such cycles from one another, for example by increasing the periodduration of the illumination stepcycle-portion of a given group of sources with respect to another one, similarly to what described for the embodiment of Figure 9. In this way it is possible to increase the correction effect already produced by the non-use of part of the light emitted by a predetermined group of sources.